

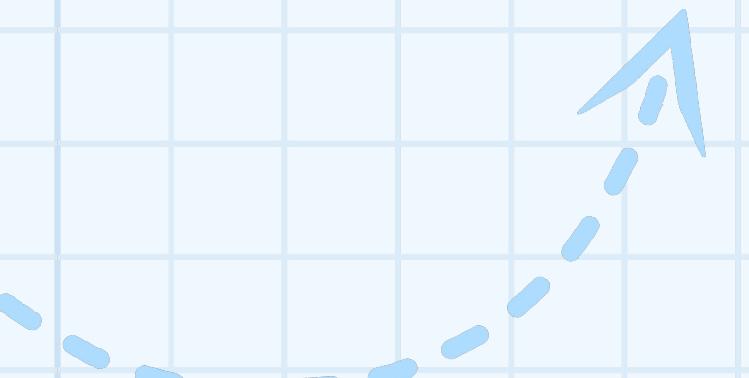
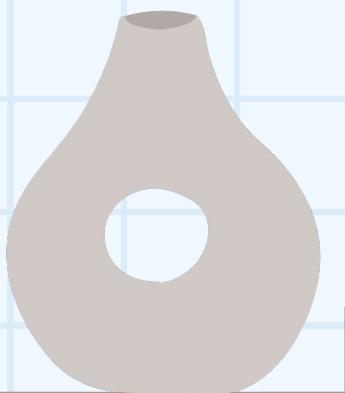
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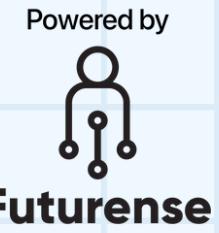
BS./BS.IN

Applied AI and Data Science

Basics of Data Analytics



Let's dive into and learn:



Types of Data Structures

1

Types of Data Formats

2



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Types of Data

- Data can be classified into many different types based on different characteristics.
- In any data analytics project, you can encounter more than one type of data depending on the problem.

Types of Data

1

Structured Data

- Follows a rigid format
- Can be organized into rows and columns
- E.g. Spreadsheets and databases

2

Semi-structured Data

- Mix of characteristics
- Doesn't conform to a rigid structure
- E.g. Emails

3

Unstructured Data

- Complex
- Not follow any format
- Cannot be organized into rows and columns
- E.g. images, videos





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Structured Data

- Has a clearly defined format
- Can be stored in well-defined schemas – spreadsheets or databases
- Can be represented in rows and columns
- Standard Statistical modelling tools can be directly used
- Usually numeric and quantitative



Examples of Structured Data

- Relational databases e.g. SQL
- Spreadsheets e.g. Excel or Google Sheets
- Forms
- Global Positioning System GPS
- Network or Web server logs



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Semi - Structured Data

- Has some structure but lacks a rigid structure or schema
- Cannot be stored in rows and columns
- Relies on tags for grouping and hierarchy
- Standard statistical analysis cannot be done directly on them
- Can be a mix of numeric, textual and image formats



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Examples of Semi - Structured

- Emails
- Documents created with markup languages such as XML
- Data gathered from multiple sources

Unstructured Data



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- No easily identifiable structure
- Cannot be organized into tabular structure with rows and columns
- Required advanced software and analytical tools to process them



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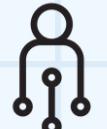
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Examples of Unstructured Data

- Web Pages
- Images across different formats
- Social Media feeds
- Video files
- Audio files



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Types of Data Format

- When we think of data we mostly think of numbers as data.
- Most datasets will be numeric in nature.
- But data can come in a variety of other formats e.g. text, images, videos
- Which type of data you need depends on the goal of your analytics



Numeric Data

- Data that can be expressed in numeric form
- Things that can be measured in numbers or counted
 - Age
 - Price of a good
 - Income
 - Sales or Revenue
 - Stock Prices
 - Rainfall or Temperature



Numeric Data

- Numeric data is usually presented in spreadsheets
- Regular rows and column structure
- Can be directly used to perform basic analysis
 - e.g. filtering or sorting



Text Data

- Data in written or textual format
 - Letters or Emails
 - Social Media Posts
 - Customer Reviews
 - Blog Posts
 - Government or Company Memos
- Usually analysed using Natural Language Processing (NLP) to process large volumes of text and extract insights
- Can be used for customer sentiment analysis

Visual Data

- Data in visual format such as images or videos
 - Photos
 - Drawings
 - Videos
 - Maps
- Usually analysed using Image Processing tools
- Applications:
 - Quality Control
 - Healthcare
 - Self-Driving Cars



Recap



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Different categories of data

structures

Common types of data



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Thank you

